Potassium Intake of the U.S. Population

What We Eat in America, NHANES 2017-2018

M. Katherine Hoy, EdD, RDN; Joseph D. Goldman, MA; Alanna Moshfegh, MS, RDN

Food Surveys Research Group
Dietary Data Brief No. 47
September 2022

Highlights

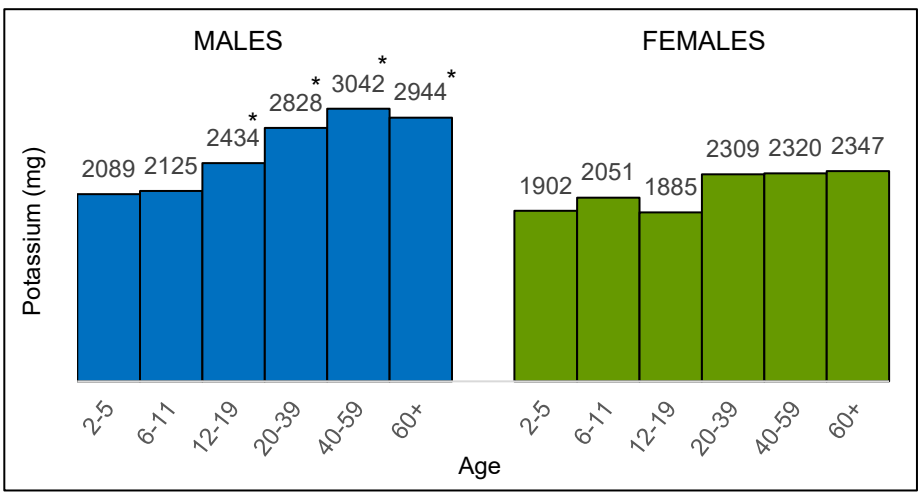
- The average daily potassium intake of the U.S. population 2 years and older was 2496 mg.
- Potassium intake of males was significantly higher than females due to their higher energy intakes. However, females consumed more potassium per 1000 kcal energy intake than males.
- Non-Hispanic Black adults had significantly lower potassium intakes compared to other race/ethnicities. There were no differences in potassium intake by income.
- Top contributors to potassium intake were Fruits, Vegetables, and 100% Juices (23%), Grain-based Mixed Dishes (15%) and Meats and Poultry (10%).

Potassium is identified in the 2020-2025 Dietary Guidelines for Americans as a nutrient of concern (1, 2) as it is associated with health benefits but is under consumed by most individuals. The Adequate Intake (AI) recommendation by the National Academies of Sciences, Engineering and Medicine (NASEM) varies by age and sex. Among adults, the AI is 3400 mg per day for males and 2600 mg for females (3). Adequate potassium intake is associated with lower blood pressure (1) and may help counteract the effects of a high sodium intake on blood pressure (2). This report presents data on potassium intake of the U.S. population using dietary intake data from What We Eat in America, NHANES 2017-2018. Foods that contribute to dietary potassium intake are also discussed.

How much potassium is the U.S. population consuming?

In 2017-2018, the average daily potassium intake of the population 2 years and older was 2496 mg (*data not shown*). Potassium intake of males 12 years and older was significantly higher than females (P<0.001). Within gender, differences were not significant among those 2-19 years and among adults 20+ years.

Figure 1. Potassium intake of the U.S. population by gender and age, 2017-2018.



* Males significantly different from females, P<0.001.

SOURCE: What We Eat in America, NHANES 2017-2018, Day 1, weighted, excluding breastfed infants

U.S. DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Beltsville Human Nutrition Research Center
Food Surveys Research Group

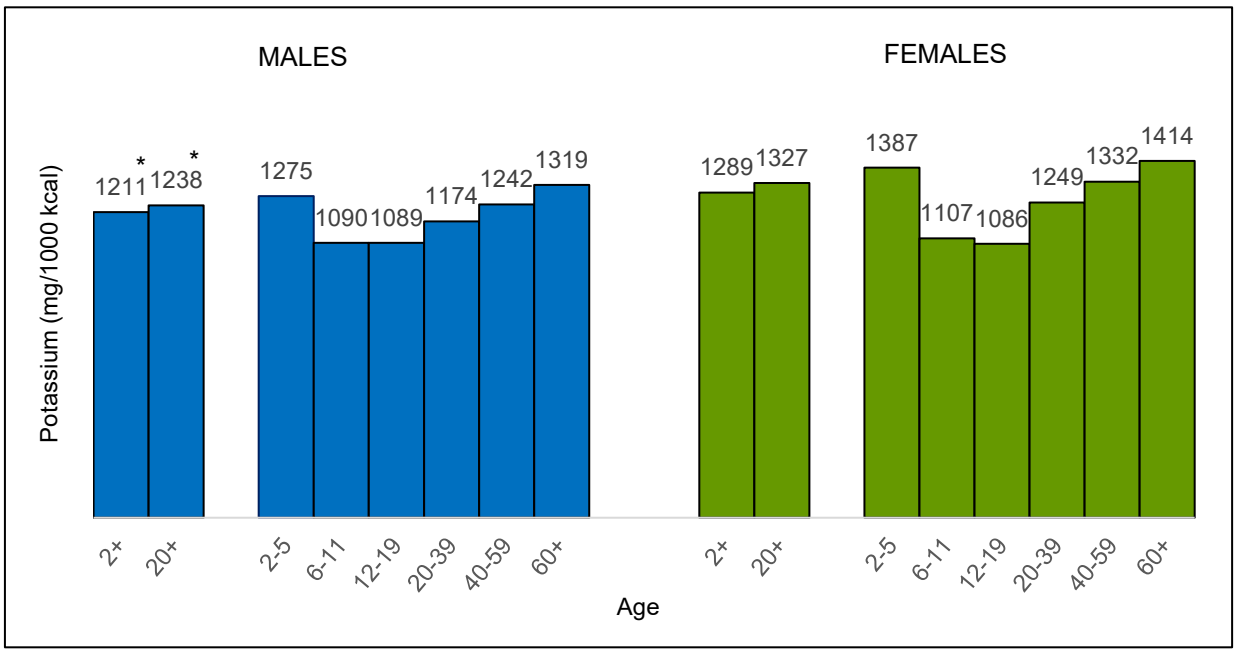
www.ars.usda.gov/nea/bhnrc/fsrg

What is the potassium density of the U.S. diet?

The higher total potassium intake by males is explained by their higher energy intakes. When potassium density is examined after adjusting for energy intake, potassium densities of the diets of all females 2+ years as well as those 20+ years were significantly higher than their male counterparts (P<0.001).

Within each gender, some differences among age groups were observed (*data not shown*). The diets of both males and females 2-5 years had significantly higher potassium density compared to those 6-19 years (P<0.001). Among adults 20 years and older, potassium density of diets for those over 60 years of age was higher than those 20-39 years (P<0.001). Adults 40-59 years of age did not differ from either. Total potassium intakes did not differ by age among males and females as shown in Figure 1.

Figure 2. Potassium intake per 1000 kilocalories by gender and by age, 2017-2018



* Males significantly different from females, P<0.001.

SOURCE: What We Eat in America, NHANES 2017-2018, Day 1, weighted, excluding breastfed infants

What is the distribution of potassium intake among the U.S. population on a given day?

Table 1 shows mean daily intake of potassium and intake at selected percentiles by age category on the reporting day. Except for males 20 years and older, most individuals consumed less than 2600 mg on the reporting day. Among females 20 years and older and among those 12-19 years, about one-quarter consumed more than 2600 mg or more of potassium. Among males 20 years and older, around one-quarter consumed more than 3400 mg on the reporting day.

Table 1. Distribution of daily potassium intake by the U.S. population by age on a given day, 2017-2018

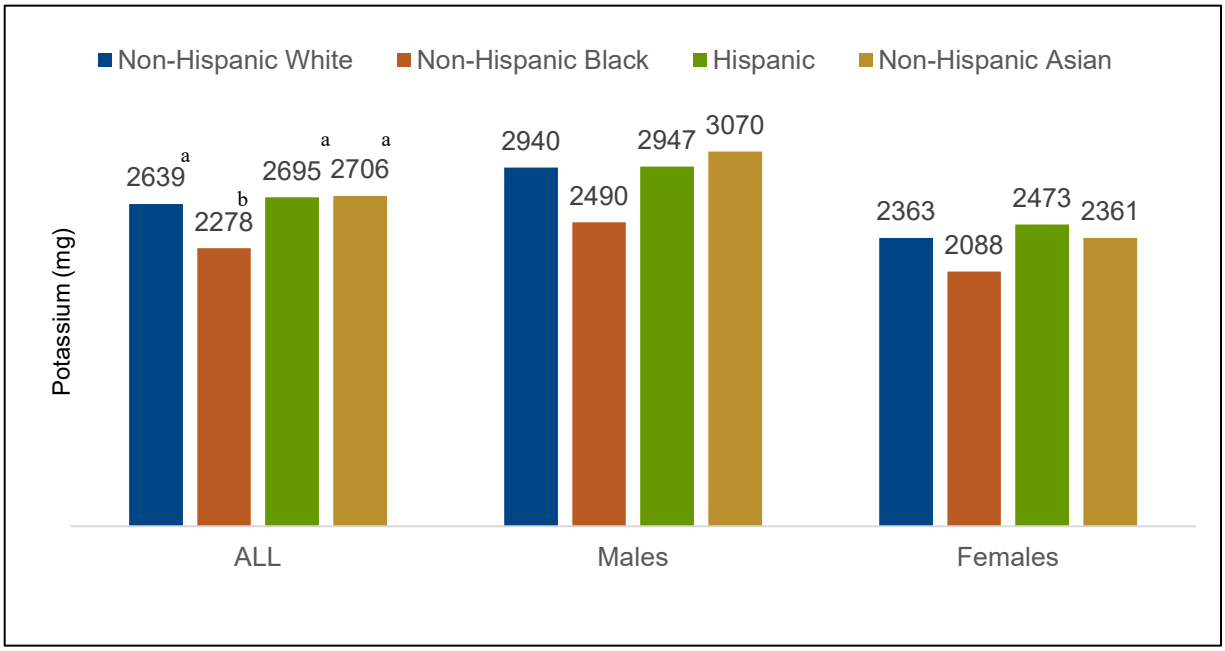
	N	Mean (mg)	SE	Distribution of daily potassium intake Percentiles				
				10th	25th	50th	75th	90th
Males and females 2-5 years	540	1997	37	1095	1432	1839	2388	3088
Males and females 6-11 years	795	2089	43	1117	1456	2008	2608	3135
Males and females 12-19 years	1045	2169	60	900	1349	1890	2742	3770
Males 20+ years	2307	2937	37	1381	1986	2758	3692	4763
Females 20+ years	2435	2324	53	1113	1596	2240	2860	3602

SOURCE: What We Eat in America, NHANES 2017-2018, Day 1, weighted, excluding breastfed infants

Does potassium intake differ by race/ethnicity or income?

Among adults, Non-Hispanic Blacks had a lower potassium intake than other race/ethnicity groups (P<0.001). Potassium intake of Non-Hispanic Black males was significantly lower than Non-Hispanic White and Hispanic males (*data not shown*). There were no differences in potassium intake among females by race/ethnicity. Differences by race/ethnicity were similar for potassium density, though Non-Hispanic Whites had a significantly lower potassium density compared to Non-Hispanic Asians (*data not shown*). There were no differences in potassium intake by income level (*data not shown*).

Figure 3. Potassium intake of males and females 20+ years by race/ethnicity, 2017-2018



[a,b,c]Means with different superscripts are significantly different, P<0.001.

SOURCE: What We Eat in America, NHANES 2017-2018, Day 1, weighted, excluding breastfed infants

What foods contain potassium?

Foods that are higher in potassium include fruits and vegetables, milk and yogurt, and protein foods such as meat, poultry, some fish, and beans and peas. Grains and grain products, sweets, and fats and oils have a lower potassium content. Table 2 shows the potassium content of several representative foods per 100 grams for common serving sizes. More information about potassium in other foods can be found at What's In The Foods You Eat *Search Tool.*

Table 2. Potassium content of selected foods per 100 grams and for common measures

Food	Common Measure	Potassium (mg) per common measure	Potassium (mg) per 100 grams
Baked potato, with skin	1 medium	919	531
Salmon, fresh, baked	1 small fillet	763	449
Spinach, cooked from fresh	½ cup	591	636
Cantaloupe, raw	1 cup	417	267
Milk, 1%	1 cup	388	159
Pinto beans, cooked	½ cup	373	405
Yogurt, low fat, with fruit	6 oz. container	366	215
Banana	1 small	362	358
Chicken breast, baked	1 medium	359	276
Edamame, boiled (raw soybeans)	½ c	338	422
Carrots, baby, raw	10	320	320
Corn, cooked	1 ear	282	269
Raisins	¼ cup	270	744
Broccoli, cooked from fresh	½ cup	268	291
Orange	1 medium	237	181
Strawberries, fresh	1 cup	230	153
Tomato, fresh	½ medium	158	287

SOURCE: Based on the Food and Nutrient Database for Dietary Studies 2017-2018 (4) used to convert food and beverages consumed in What We Eat in America, NHANES 2017-2018 into gram amounts and determine their nutrient values. Underlying food composition data are from USDA FoodData Central (5).

What foods contribute to potassium intake of the population?

As shown in Table 3, Fruits and Vegetables contributed 20% of total potassium intake for the population, of which almost three-quarters was from Vegetables. Of the total contribution by Vegetables, about half was from White potatoes (except chips).Grain-based Mixed Dishes such as pasta mixed dishes, pizza, sandwiches and fried rice accounted for about 15% of total potassium intake. Ten percent of potassium intake was from Meats and Poultry. Smaller percentages of potassium intake were contributed by Milk and Milk Drinks (8%), and Coffee and Tea (7%). Savory snacks, Plant-based Protein Foods, Meat/Poultry mixed dishes, and 100% juices each accounted for about 3% of potassium intake of the population.

Table 3. Percent contribution of What We Eat in America food categories to potassium intake of the U.S population 2+ years, 2017-2018

FOOD CATEGORIES†	Individuals Reporting (%)‡	Contribution to Potassium (%)
Fruits, Vegetables, and Juices	**78**	**23**
Total Vegetables	**65**	**14**
Vegetables: Fresh, frozen, canned, salads, vegetable mixtures, except white potatoes	54	7
White Potatoes: Baked, boiled mashed, French fries, hash browns, potato salad, except potato chips	27	6
Total Fruits: Fresh, frozen, canned, salads	**44**	**7**
100% Juices: Orange juice and all other 100% fruit/vegetable juices	**16**	**3**
Grain-based Mixed Dishes: Pasta mixed dishes, macaroni and cheese, rice mixed dishes, pizza, sandwiches, burgers, burritos, tacos, tamales, fried rice, stir-fry and soy-based mixtures	**63**	**15**
Meats and Poultry	**58**	**10**
Poultry: Fried/baked chicken, patties, nuggets, turkey, duck	26	4
Meats: Beef, pork, lamb, game	16	3
Cured Meats: Ham, luncheon meats, frankfurters, bacon, sausage	29	3
Milk and Milk Drinks	**43**	**8**
Milk: Whole, reduced fat, low fat, nonfat	35	6
Flavored Milk and Milk Drinks: Flavored milk, milk substitutes, milkshakes	11	2
Coffee and Tea	**60**	**7**
Coffee	45	5
Tea	26	2
Meat/poultry Mixed Dishes: Meat or poultry as main ingredient with grain and/or vegetable, gravies, sauces	**14**	**3**
Plant-based Protein Foods: Beans/peas and beans/peas mixed dishes, nuts and seeds, soy products	**24**	**3**
Savory Snacks: Chips, crackers, popcorn, pretzels	**46**	**3**

† Food categories not listed including Seafood, Breads and Tortillas, Cheese and Yogurt, Cereals, Soups, Sweetened Beverages, Beer and Wine, Sugars and Sweets, and Condiments, Dips, Sauces each contribute <3% of potassium.

‡ Percentage of individuals reporting the foods in the category at least once on the reporting day.

SOURCE: What We Eat in America, NHANES 2017-2018, Day 1, weighted, excluding breastfed infants.

Definitions

Adequate Intake: The recommended average daily intake level based on observed or experimentally determined approximations or estimates of nutrient intake by a group (or groups) of apparently healthy people that are assumed to be adequate – used when an Estimated Average Requirement (EAR) cannot be determined. (2)

Potassium density: The amount of potassium in a specified amount of a food or diet in order to make comparisons. Comparisons of the potassium density of foods are usually on a per 100-gram basis, and comparisons of the potassium density of the diet are usually on a per 1000 kcal basis.

References

1. U.S. Department of Agriculture and U.S. Department of Health and Human Services. *Dietary Guidelines for Americans, 2020-2025*. 9th Edition. December 2020. Available at DietaryGuidelines.gov.
2. Dietary Guidelines Advisory Committee. 2020. *Scientific Report of the 2020 Dietary Guidelines Advisory Committee: Advisory Report to the Secretary of Agriculture and the Secretary of Health and Human Services*. U.S. Department of Agriculture, Agricultural Research Service, Washington, DC. Available at: https://doi.org/10.52570/DGAC2020
3. National Academies of Sciences, Engineering, and Medicine. 2019. *Dietary Reference Intakes for Sodium and Potassium*. Washington, DC: The National Academies Press.https://doi.org/10.17226/25353.
4. U.S. Department of Agriculture, Agricultural Research Service. 2020. *USDA Food and Nutrient Database for Dietary Studies 2017-2018.* Food Surveys Research Group Home Page, http://www.ars.usda.gov/nea/bhnrc/fsrg
5. U.S. Department of Agriculture, Agricultural Research Service. FoodData Central, 2019. fdc.nal.usda.gov.

Data source

Estimates in this report are based on one day of dietary intake data collected in What We Eat in America (WWEIA), the dietary intake interview component of the National Health and Nutrition Examination Survey (NHANES), in 2017-2018. Using the 5-step USDA Automated Multiple-Pass Method (AMPM) for the 24-hour recall, day 1 dietary data were collected in-person. A total of 7,122 individuals age 2+ years (3,481 males and 3,641 females), excluding breastfed infants, who provided complete and reliable dietary intake data in 2017-2018 were included. Sample weights were applied in all analyses to produce nationally representative estimates. USDA's What We Eat in America food categories were used to describe contribution of foods to potassium intake.

About the authors

M. Katherine Hoy is a Nutritionist, Joseph D. Goldman is a Mathematical Statistician, Alanna J. Moshfegh is a Supervisory Nutritionist with the Food Surveys Research Group, Beltsville Human Nutrition Research Center, Agricultural Research Service, USDA.

Suggested citation

Hoy MK, Goldman JD, Moshfegh AJ. Potassium: *What We Eat in America*, NHANES 2017-2018. Food Surveys Research Group Dietary Data Brief No. 47.

Copyright information

U.S. DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Beltsville Human Nutrition Research Center
Food Surveys Research Group
http://www.ars.usda.gov/nea/bhnrc/fsrg